



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/670,499 | 09/26/2003 | Kazuo Shimizu | 2003-1274A | 8618 |
| 513 | 7590 | 07/21/2005 | EXAMINER | |
| WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021 | | | SHAKERI, HADI | |
| | | ART UNIT | | PAPER NUMBER |
| | | 3723 | | |
| DATE MAILED: 07/21/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

SP

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/670,499 | SHIMIZU ET AL. | |
| | Examiner | Art Unit | |
| | Hadi Shakeri | 3723 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-3 and 5-17 is/are pending in the application.
- 4a) Of the above claim(s) 6-15 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-3,5,16 and 17 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 26 September 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Election/Restrictions

1. This application contains claims 6-15 drawn to an invention nonelected without traverse in Paper No. 042505. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-3, 5, 16 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 16 and 17, the language as written, i.e., "...a sum of radial lengths of said light source and said spectroscope being larger than a radius of the workpiece..." renders the claims indefinite, for making the scope unascertainable. The length is being limited compared to a workpiece. A size of a workpiece is not defined, so the limitation becomes relative without any range or limit set by the claim or the specification as originally filed.

Claim Rejections - 35 USC § 103

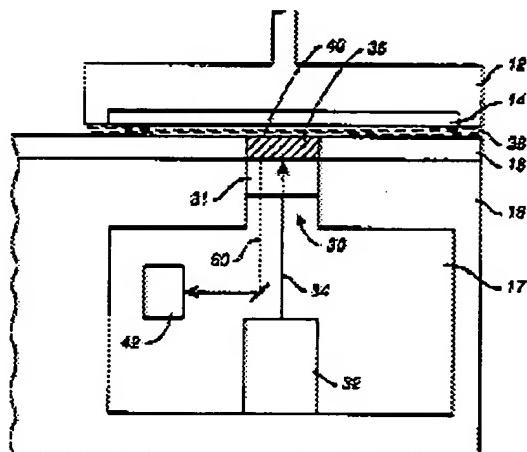
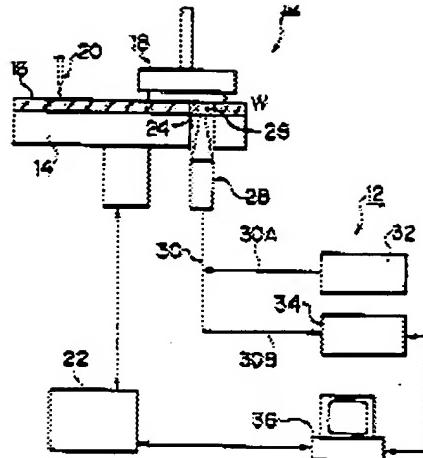
4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 3723

5. Claims 1-3, 5, 16 and 17 (as best understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane et al. (6,511,363) in view of Wiswesser et al. (6,716,085).

Yamane et al. meets all of the limitations of claim 1, i.e., a polishing table (14) having a polishing surface (16); a top ring (18) for holding a workpiece to be polished and pressing the workpiece against said polishing surface on said polishing table; a film thickness measuring device (12), said film thickness measuring device including, a light source (32) for applying light having a predetermined wavelength to a surface of a workpiece; and spectroscope (34) for separating light reflected from the surface of the workpiece; a charge coupled device array (48) for capturing light separated by said spectroscope; and a controller operable to analyze information captured by said charge coupled device array over an entire surface of the workpiece to obtain a film thickness at a desired point on the surface of the workpiece and wherein a sum of radial lengths of the light source (32) and the spectroscope (34) is larger than a radius of the workpiece, see Fig. 1, except for the film thickness measuring to be embedded in the polishing table.



Wiswesser et al. teaches a CMP apparatus with endpoint detection wherein the film thickness measurement device is embedded in the platen or alternatively it may be located below the platen (03:56-57). It would have been obvious to one of ordinary skill in the art, at the

time the invention was made, to modify the invention of Yamane et al. with the film measurement device embedded in the platen as taught by Wiswesser et al., as an alternative means for economical reasons or to better protect the device.

Regarding claims 2-4 (as best understood), Yamane et al. as modified by Wiswesser et al., meets the limitations, i.e., wherein the light capturing device is capable of receiving light having a single wavelength or a plurality of wavelength.

Regarding claim 5, Yamane et al. as modified by Wiswesser et al., meets all of the limitations, except for specifically disclosing a controller that filters a wavelength influenced by a polishing liquid. Wiswesser et al., however, teaches avoiding wavelengths that cause scattering (05:5-44), and the controller as disclosed by prior art is capable of meeting the functional language. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to further modify the invention of Yamane et al. in view of Wiswesser et al., in adapting the controller to filter wavelength influenced by the slurry in reducing the amount of scattering.

6. Claims 1-3, 16 and 17 (as best understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane et al. in view of Hiyama et al. (5,838,447).

Yamane et al. as described above and in the previous Office Action is considered to meet all of the limitations of claims 1, 16 and 17 as best understood, except for the film thickness measuring to be embedded in the polishing table.

Hiyama et al. teaches a CMP apparatus with endpoint detection wherein the film thickness measurement device is embedded in the platen and including sensors taking measurement over an entire surface of the wafer (02:58). It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the invention of Yamane et

Art Unit: 3723

al. with the film measurement device embedded in the platen as taught by Hiyama et al., as an alternative means and to scan an entire surface of the wafer.

Regarding claims 2-4 (as best understood), Yamane et al. as modified by Hiyama et al., meets the limitations, i.e., wherein the light capturing device is capable of receiving light having a single wavelength or a plurality of wavelength.

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamane et al. in view of Hiyama et al. as applied to claim 1 above, and further in view of Wiswesser et al.

Regarding claim 5, Yamane et al. as modified by Hiyama et al., meets all of the limitations, except for specifically disclosing a controller that filters a wavelength influenced by a polishing liquid. Wiswesser et al., however, teaches avoiding wavelengths that cause scattering (05:5-44), and the controller as disclosed by prior art is capable of meeting the functional language. It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to further modify the modified invention of Yamane et al. and Hiyama et al. in view of Wiswesser et al., in adapting the controller to filter wavelength influenced by the slurry in reducing the amount of scattering.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Response to Arguments

9. Applicant's arguments filed 05/12/05 have been fully considered but they are not persuasive. The argument that one of ordinary skill in the art would know the scope of the claims as recited is not persuasive. One of ordinary skill in the art would recognize that the typical wafer diameters are 6 inches, 8 inches and 12 inches. The limitation that the device has a radius larger than the workpiece renders the scope unascertainable, since it is unclear whether the device is, e.g., 4 inches, 5 inches or 7 inches, in the case that the apparatus is designed to only polish 6, 8 and 12 inches wafers respectively, or is the apparatus, as normally common in the art, is designed to polish all these wafer sizes by only changing the top ring that holds the workpiece, in which case the limitation for the size of the device, as recited in the claim, changes with the size of the intended workpiece, making the scope unascertainable, since Applicant would be claiming an apparatus with a device having a size in flux.

The argument against Yamane as modified by Wiswesser is not persuasive. Firstly as shown in Fig. 1 of Yamane the sum of width or lengths of light source and the spectroscope is larger than a radius of the wafer being polished, and the fact that the size of the optical system (28) is smaller is not relevant to the claims as recited, further if a small wafer, e.g., two inches in diameter is used, even the optical system may be larger, so as indicated the claims as best understood are met.

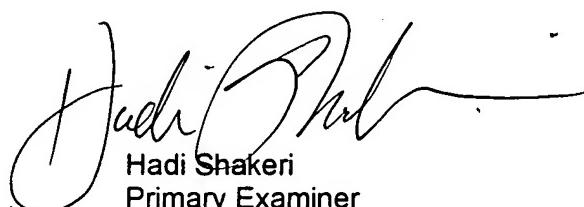
10. Prior art made of record and not relied upon are considered pertinent to applicant's disclosure. Laursen et al. is cited to show related inventions.

Art Unit: 3723

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hadi Shakeri whose telephone number is 571-272-4495. The examiner can normally be reached on Monday-Thursday.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Hadi Shakeri
Primary Examiner
Art Unit 3723
July 19, 2005